METROPOLITAN
TRANSPORTATION
COMMISSION

Joseph P. Bort MetroCenter
101 Eighth Street
Oakland, CA 94607-4700
Tel.: 510.464.7700
TTY/TDD: 510.464.7769
Fax: 510.464.7848
e-mail: info@mtc.dst.ca.us

BAY BRIDGE DESIGN TASK FORCE
Engineering and Design Advisory Panel
Wednesday, April 9, 1997, 1 p.m.
Auditorium
Joseph P. Bort MetroCenter
101 Eighth Street
Oakland, CA 94607

Chairperson: Mary King
Members: Sharon Brown
Mark DeSaulnier
Elihu Harris
Tom Hsieh
Jon Rubin
Angelo Siracusa
Staff Liaison: Steve Heminger

AGENDA

1. Welcome and Self-Introductions -- Chair Joseph Nicoletti and Vice Chair John Kriken
2. Purpose of MTC Task Force, Timetable, and Role of Engineering and Design Advisory Panel -- Larry Dahms, MTC
3. Composition of Panel and Addition of Members -- Will Travis, BCDC
4. Development of Engineering and Design Criteria for New Bridge -- Denis Mulligan, Caltrans and Will Travis, BCDC
5. Other Business/Public Comment

Public Comment: The public is encouraged to comment on agenda items at committee meetings by completing a request-to-speak card (available from staff) and passing it to the committee secretary or chairperson. Public comment may be limited by any of the procedures set forth in Section 3.09 of MTC's Procedures Manual (Resolution No. 1058, Revised) if, in the chair's judgment, it is necessary to maintain the orderly flow of business.
Record of Meeting: MTC meetings are tape recorded. Copies of recordings are available at nominal charge, or recordings may be listened to at MTC offices by appointment.
Sign Language Interpreter or Reader: If requested three (3) working days in advance, sign language interpreter or reader will be provided; for information on getting written materials in alternate formats call 510/464-7787.

(COMM/BAY BRIDGE/AGENDA - 4/9)

Bay Bridge Design Task Force
Engineering and Design Advisory Panel
April 9, 1997 - 1:00 p.m.

NAME	REPRESENTING	ADDRESS
1. PERRY A. HAVILAND, FAIA	SELF & AIA EB	OAKLAND
2. J. H. WEDDELL	CHP-SF	455 EIGHTH ST.
	(415) 557-1094	SF 94104
3. STEVE THOMPSON	BCDC DRB	90 Adams Mill Valley 94941
4. Ken Jong	PBQ&D	303 2nd St SF
5. Nita Orr	BART	800 madison Oak.
6. Tim Dougherty	PBQ&D	303 2nd St SF
7. Mike Davis	PBQ&D	303 2nd 700N SF94107
8. CRISTINA FERRAZ	BCDC-	30 Van Ness Ave # 2011
9. Joseph Penzien	CALTRANS	IBEC 1995 Univ. Ave. Suite 189 Berkeley, CA 94704
10. STEVE McADAM	BCDC	STAFF

Bay Bridge Design Task Force
Engineering and Design Advisory Panel
April 9, 1997 - 1:00 p.m.

NAME	REPRESENTING	ADDRESS
1. Jeffrey Heller	AIA/SPUR	San Francisco
2. Chris Ames	BCDC/ECRTS	Palo Alto.
3. RG GRAY	self. Arch & SE	Berkeley
4. LYLE OEHLER	CALTRANS	OAKLAND
5. Marin Carlson	Office of Mayor Harris	Oakland
6. Joel La Claire	BCDC	
7. Shannon O'Hare	Oakland PW A	Oakland
8. ~~[illegible]~~ FRANKIE LEE	SOHA ENGINEERS	550 Kearny St. SF 94108
9. [illegible]	BCDC DRB	Pier 1½ The Embarcadero SF
10. [illegible]	BCDC/CALTRANS	— ~~[illegible]~~

PRESS
Bay Bridge Design Task Force
Engineering and Design Advisory Panel
April 9, 1997 - 1:00 p.m.

NAME	REPRESENTING
1. RONNA ABRAMSON	OAK TREE
2. Leslie Katz	Bay City News Service
3. Robert Oakes	Contra Costa Times
4. RJ Perman	KGO Radio
5. Bill Smith, CEO & Director, Tribal Cycle Manufacturing	9 Commodore Dr #306 Emeryville CA 94608 510-658-2628
6.	
7. ?	Channel 7
8. Case Nolte	Chronicle
9.	
10.	

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Fax: 510.464.7848
e-mail: info@mtc.dst.ca.us

FACT SHEET

SAN FRANCISCO-OAKLAND BAY BRIDGE DESIGN TASK FORCE

Members:	Mary King (Chair)	representing Alameda County
MTC	Sharon Brown	representing cities of Contra Costa County
Commissioners	Mark DeSaulnier	representing Contra Costa County
	Elihu Harris	representing cities of Alameda County
	Tom Hsieh	representing San Francisco County
	Jon Rubin	representing city of San Francisco
	Angelo Siracusa	representing Bay Conservation & Development Commission

Purpose:

To develop a consensus recommendation on a design option for a new eastern span of the Bay Bridge.

- Caltrans has proposed two options: a skyway viaduct and a twin-tower cable-stay bridge. The Task Force also will consider other options, such as a single-tower cable-stay bridge.
- All design options will be evaluated by a team of cost reviewers, engineers, seismic specialists and design experts. All reviews are scheduled to be completed by June 1997.

To recommend any additional features that might be included as part of the bridge project.

- Additional features include cable towers, bike lanes or other design elements.
- The cost of additional features would not be borne by the state.

Public Participation Process:

The Task Force will actively solicit public advice and opinions on design options. Four separate avenues are available to the public to communicate their views.

- **Public meetings** will be held in Alameda, Contra Costa, Solano and San Francisco counties. (See location, date and time of each meeting on reverse side.)
- **Telephone Comment Line**: Call the regional transportation number — 817-1717 — and press option 7. (No area code is needed in the Bay Area to make this call.)
- **The Internet**. Two options are available:
  1. Send an e-mail directly to Caltrans at: <sfobb@trmx3.dot.ca.gov>.
  2. Go to Caltrans' Web site at: <http://www.dot.ca.gov/dist4/. Comment opportunities are available at the bottom of the special "San Francisco-Oakland Bay Bridge Retrofit Replacement" page.
- **Mail**: Write to Commissioner Mary King, c/o MTC, 101 Eighth Street, Oakland 94607.

(over)

SAN FRANCISCO-OAKLAND BAY BRIDGE DESIGN TASK FORCE

Public Meeting Schedule

Location	Date	Time
Contra Costa County County Administration Bldg Board of Supervisors Chambers Room 107 651 Pine Street Martinez, CA	Wednesday April 16, 1997	5:30 p.m. - 7:00 p.m.
Solano County Suisun City City Hall City Council Chambers 701 Civic Center Blvd. Suisun City, CA	Wednesday, April 23, 1997	4:30 p.m. - 6:00 p.m.
San Francisco County City Hall Board of Supervisors Chambers Room 404 401 Van Ness Avenue San Francisco, CA	Thursday, May 8, 1997	5:30 p.m. - 7:00 p.m.

(April 9, 1997)

Bay Bridge Design Task Force
Engineering and Design Advisory Panel

Process Outline

The objective of this process is provide a structure for the Engineering and Design Advisory Panel to develop its recommendations for the Bay Bridge Design Task Force.

I. Establish design and performance criteria.
- initial draft prepared by staff
- review, modification and adoption by Panel

II. Identify alternatives consistent with design and performance criteria.
- Caltrans design proposals
- Suggestions from the Committee
- Suggestions from invited experts
- Suggestions from the public (the Panel will provide time and a format for presentations by public)

III. Screen all proposals.
- Screening criteria will be developed by Caltrans with review, modification and approval by the Panel
- The screening criteria will be designed to allow increasingly more rigorous evaluation of proposals found to have merit as a basis for determining the most promising candidates

IV. Select and analyze most likely candidates from screening process.
- Panel to select most likely candidates that meet the design and performance criteria
- Caltrans will provide cost analysis of these candidates

V. Develop final Panel recommendation.
- Panel reviews structure types and makes recommendations to the Bay Bridge Design Task Force
- Task Force forwards findings regarding preferred design based on the design criteria to the Commission

wfh:bbridge process

SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION
Thirty Van Ness Avenue • Suite 2011 • San Francisco, California 94102 • (415) 557-3686 • FAX: (415) 557-3767

DESIGN REVIEW BOARD ROSTER

John Kriken, Chairman
(Architect)
Skidmore, Owings & Merrill
333 Bush Street
San Francisco, CA 94104
Telephone: (415) 981-1555
FAX: (415) 986-4020
Appointed on: 08/01/85

Karen Alschuler
Simon, Martin-Vegue
Winkelstein & Moris
501 Second Street
San Francisco, California 94107
Telephone: (415) 546-0400
FAX: (415) 882-7098
Appointed on: 09/02/94

Ephraim Gordon Hirsch
(Engineer)
E.G. Hirsch and Associates
Pier 1-1/2
The Embarcadero
San Francisco, CA 94111
Telephone: (415) 362-6373
FAX: (415) 362-4332
Appointed on: 07/19/91

Mary Margaret Jones
(Landscape Architect)
Hargreaves Associates
539 Bryant Street
San Francisco, CA 94107-1237
Telephone: (415) 543-4957
FAX: (510) 543-0516
Appointed on: 02/15/90

Jacque Keller
Keller Mitchell & Co.
111 New Montgomery St., Suite 303
San Francisco, CA 94105
Telephone: (415) 546-9987
Fax: (415) 546-9958
Appointed on 09/01/94

Steve C. Thompson
(Architect)
Steve Thompson and Associates
90 Adams
Mill Valley, CA 94941
Telephone: (415) 388-9630
FAX: (415) 388-9650
Appointed on: 08/01/85

Peter Walker
(Landscape Architect)
Peter Walker William Johnson & Partners
739 Allston Way
Berkeley, CA 94710
Telephone: (510) 849-9494
FAX: (510) 849-9333
Appointed on 07/20/95

Commission Staff:
Joe LaClair

SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION
Thirty Van Ness Avenue • Suite 2011 • San Francisco, California 94102 • (415) 557-3686 • FAX: (415) 557-3767

ENGINEERING CRITERIA REVIEW BOARD ROSTER

Professor Edward L. Wilson, Chairman
(Structural Engineering)
1050 Leneve Place
El Cerrito, CA 94530
Telephone: (510) 524-4056
Appointed on: 06/07/84

Christopher Arnold
(Architecture)
Building Systems Development, Inc.
1248 Waverley
Palo Alto, CA 94301
Telephone: (415) 462-1812
Appointed on: 06/07/90

Roger D. Borcherdt
(Geology)
U. S. Geological Survey
345 Middlefield Road
Menlo Park, CA 94025-3591
Telephone: (415) 329-5619
Appointed on: 11/07/92

Robert Brown
(Geology)
U. S. Geological Survey
345 Middlefield Road
Menlo Park, CA 94025-3591
Telephone: (415) 329-5620
Appointed on: 06/07/90

James H. Gates
(Structural Engineering)
Structural Mechanics Branch
Engineering Service Center
California Department of Transportation
P. O. Box 942874
Oakland, CA 94274-0001
Telephone: (916) 227-8773
Appointed on: 04/12/96

Patrick Lucia
Geo Syntech Consultants
1600 Riviera Avenue, Suite 420
Walnut Creek, CA 94596
Telephone: (510) 943-3034

Joseph Nicoletti, Vice Chairman
(Structural Engineering)
URS/John A. Blume and Associates
100 California Street, Suite 500
San Francisco, CA 94111
Telephone: (415) 774-2720
Appointed on: 11/01/79

Kuei-Wu Tsai
(Soils Engineering)
Department of Civil Engineering
San Jose State University
One Washington Square
San Jose, CA 95192
Telephone: (408) 924-3902
Appointed on: 12/19/85

Thomas Wosser
(Structural Engineering)
H. J. Degenkolb Associates, Engineers
350 Sansome Street, Suite 900
San Francisco, CA 94104
Telephone: (415) 392-6952
Appointed on: 06/07/90

Y. C. Yang
(Structural Engineering)
131 - 16th Avenue
San Francisco, CA 94108
Telephone: (415) 989-8952
Appointed on: 01/16/92

Jason Thompson
(Staff Engineer/Pro Bono)
KPFF Consulting Engineers
639 Front Street, Suite 200
San Francisco, CA 94111
Telephone: (415) 989-1004

May 21, 1996

CALTRANS SEISMIC ADVISORY BOARD:

rev 4/19/95

Joseph Penzien, Professor Emeritus
International Civil Engineering Consultants, Inc.
1995 University Avenue, Suite 119
Berkeley, CA 94704

I. M. Idriss, Professor
Dept. of Civil Engineering
University of California, Davis
Davis, CA 95616

Bruce A. Bolt, Professor Emeritus
University of California, Berkeley
Seismographic Station
499 McCone Building
Berkeley, CA 94720

Alexander C. Scordelis, Nishkian Prof. Emeritus
University of California, Berkeley
Department of Civil Engineering
Davis Hall, Room 721
Berkeley, CA 94720

Frieder Seible, Professor
University of California-San Diego
Structural Systems
Mail Code 0085
La Jolla, CA 92093-0085

Nicholas Forell, Structural Engineer
Forell/Elsesser Engineers, Inc.
160 Pine Street
San Francisco, CA 94111

Joseph Nicoletti, Structural Engineer
URS Consultants
100 California Street, Suite 500
San Francisco, CA 94111-4529

John F. Hall, Professor
California Institute of Technology
Mail Code 104-44
Pasadena, CA 91125

PEER REVIEW ~~MEETING~~ Panel FOR
~~SATURDAY, JANUARY 25, 1997~~
~~8:00 - 5:00 p~~.m.

_ Jerry Fox (East Coast) 516-742-4336 (home & FAX-W)
3 Whitehall Blvd.
Garden City, N.Y. 11530

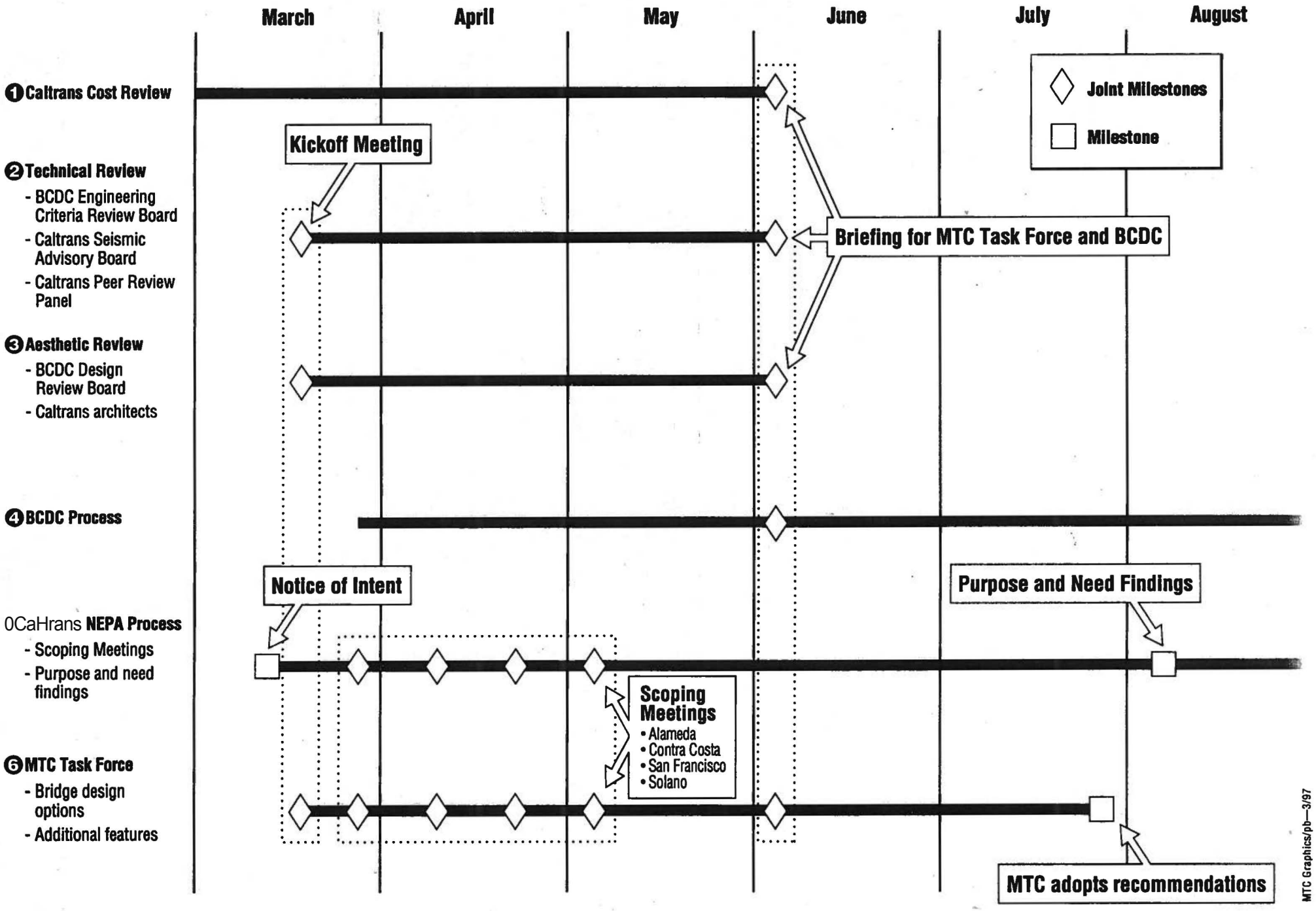
_ I.M. (Ed) Idriss - (916) 752-5403
Civil Engineering Dept.
University of California Davis
Davis, CA 95616

_ Frieder Seible - (619) 534-3993 (Fax -W)
Assistant Professor
Division of Structural Engineering
Dept. of AMES, B-010
Universtiy of Calif San Diego
La Jolla, CA 92993-0085

_ Chuck Seim - (415) 291-3700 (415) 433-0007
T.Y. Lin International
825 Battery St.
S.F. 94111

_ ~~Mark Reno~~ [redacted]

East Span Bay Bridge Design Review Timetable - 1997



DRAFT TYPE SELECTION/DESIGN CRITERIA FOR THE EAST SPANS SFOBB REPLACEMENT

(BHM ver 2.0; ctcrit)

HIGHWAY

GENERAL REQUIREMENTS

- The existing level of traffic flow service shall be maintained.
- Geometry must be compatible with the existing facilities which must be matched in location as well as grade and curve.
- Lane closure charts for staging prepared by Caltrans shall be adhered to during construction.

BRIDGE STANDARDS

- A design speed of 65 miles per hour or 100 kilometers per hour shall be maintained.
- The maximum allowable deck grade shall be 2.74%.
- The minimum horizontal curve radius on mainline shall be 3000 feet or 1000 meters and is based upon Stopping Site Distance (SSD) and is function of 3 meter shoulders.
- The Minimum allowable shoulder widths shall be 10 feet or 3 meters.
- Lane widths shall be 12 feet or 3.6 meters.
- Required minimum clearances for marine traffic are satisfied by a single clear portal 138 feet or 42 meters vertically above the mean high water level and 500 feet or 143 meters horizontally between fenders.

  (United States Coast Guard makes the final determination)

- A Maximum superelevation rate of 0.04 meters/meter for a 1000 meter curve shall be maintained.
- The Stopping Site Distance (SSD) is 190 meters as a function of a 100 kilometers per hour speed.

- The Decision Site Distance (DSD) is 315 meters or 1050 feet.
- The Minimum vertical curve length is (2V) in which V equals the design speed.
- The minimum horizontal clearance is 10 feet or 3 meters.
- The minimum vertical clearnace is 5.1 meters.

RAMP STANDARDS

- The minimum design speed at an exit nose is 80 kilometers per hour or 50 miles per hour.
- The minimum design spped at a terminus is 40 kilometers per hour or 25 miles per hour.
- Lane widths shall be 3.6 meters or 12 feet.
- Right shoulders shall be 2.4 meters or 8 feet.
- Left shoulders shall be 1.2 meters or 4 feet.
- The Stopping Site Distance is 430 feet or 130 meters as a function of a 50 miles per hour or 80 kilometers per hour speed, respectively.
- The maximum allowable deck grade on a ramp shall be 8%.
- A Maximum superelevation of 12% for a curve radius equal to or less than 190 meters or 625 feet shall be maintained.

BICYCLES

- The bicycle facility shall be separated from moterized traffic by a barrier.
- The minimum width of paved path shall be 3.6 meters or 12 feet.
- The minimum horizontal clearance shall be 0.6 meters or 2 feet.
- The minimum vertical clearance shall be 2.5 meters or 8 feet.
- The minimum bicycle path design speed is 40 kilometers per hour or 20 miles per hour.

ENVIRONMENTAL

- The design should strive to minimize impact to the bay.
- The design should strive to minimize impact to Yerba Buena Island (YBI).
- The design should strive to minimize impact to the extension of land into the bay on the Oakland side.
- Dredging should be minimized.
- Many species of wildlife warrant consideration as part of this project. These include: peregrine falcon, winter-run Chinook salmon, double-crested cormorant, least tern, clapper rail, pacific herring, and harbor seal. It is believed that the removal of the nesting sites during selected times of the year will impact the birds, dredging during selected times of the year may impact the fish, and boat access may impact the harbor seals. Some of these will likely be impacted and will likely require mitigation measures be taken by Caltrans. It is recognized that certain design features may offer relatively greater potential for nesting.
- The wetlands east of the toll plaza should be avoided.
- Noise near and on YBI should be minimized.
- Replacement bridge foundation locations should, to the extend feasible, avoid know prehistoric and potential historic archaeological sites on YBI.
- Historic properties on YBI should be avoided.

RIGHT-OF-WAY

- The new design should be as compatible as is reasonable with present use and future development of YBI (e.g., USCG & City of SF island use plans) and the fill in the bay on the Oakland side of the bridge.

BRIDGE DESIGN

- The bridge type and spans should meet the requirements for the highway design.
- The design should anticipate potential inefficiencies of the foundations in bay mud.
- For efficient span lengths and foundations a configuration is selected by envisioning an efficient foundation design in which group efficiency is high (i.e., few piles and/or large pile spacing) and few, if any, additional piles are required for load case VII beyond required piles for load cases other than load case VII (i.e., foundation service loads are increased by the designer increasing span lengths until required capacities due to service loads are near to required capacities due to the seismic load case).
    - The above described design process will lead to a desire to maximize the size of piles. This will lead to the question of how large of a pile can be used.
    - The above described design process will generate several different span lengths as the soils and height of the roadway vary. If the relatively great variation in structure type of the existing east spans is to be avoided, a degree of compromise should be anticipated between economy and structure type continuity in pursuit of structure continuity.
- Desired span lengths tend to define superstructure type, first by feasibility and then by economy. Minimum depth-to-span ratios must be respected in order to avoid compromising camber prediction methodologies and live load deflection limiting criteria.
- Post-Earthquake performance of the new structure should be high.
    - The new structure should be capable of carrying emergency traffic as well as normal traffic. (Some damage is expected (e.g., minor plastic hinging, thermal deck joints requiring replacement).)
    - Damage to the structure during a large seismic event should be managed (i.e., location and quantity controlled by design). No damage in the foundation should be tolerated as it cannot be easily accessed. Even if the design plans for no damage in the system, design of a fuse for location and ductility should be completed. In the very best of seismic designs, this challenge is met with simplicity yielding a high confidence in performance rather than with sophisticated analysis of relatively complex behaviors (i.e., think and design smarter not harder).
    - On stiff sites the structural system should be soft and on soft sites the structural system should be stiff.

- Force reduction factors used for sizing members should be no greater than 3.0. (ref. ATC-32)

- Bridge response to seismic ground motions are likely to be dominated by a velocity pulse. A rocking system should be considered to minimize damage and plastic deformation at the time of a pulse and following an earthquake.

- Torsional capacities within the superstructure must be capable of carrying seismic demands.

- Drop-type vulnerabilities should be avoided and elimination should be considered.

- The type selection should respect constructability and the capacity to maintain quality assurance.

- Long term maintenance must be considered. The selection of structure type, a variety of potential system components, and structure materials should consider necessary maintenance programs and evaluate the likelihood of such programs receiving necessary consistent funding.

  - As part of this decision it should be recognized that structure continuity (including connections) during seismic events is an important consideration.

  - Distance between thermal expansion joints should not exceed 1000 feet.